

SECTION V.—SEISMOLOGY.

SEISMOLOGICAL REPORTS FOR MAY, 1918.

W. J. HUMPHREYS, Professor in Charge.

[Dated: Seismological Investigations, Weather Bureau, July 3, 1918.]

TABLE I.—*Noninstrumental earthquake reports, May, 1918.*

Day.	Approximate time, Greenwich Civil.	Station.	Approximate latitude.	Approximate longitude.	Intensity Rossi-Forel.	Number of shocks.	Duration.	Sounds.	Remarks.	Observer.
1918. May 1	H. m. 32	ARIZONA.								
		Cibola.....	33 21	114 42	3	1	M. s. 20	Rumbling.....	Gradual trembling E-W, rattling.	L. W. Bishop.
		Yuma.....	32 45	114 36	3	1	03	Rattling.....	Abrupt rocking and trembling..	S. Hackett.
1	4 32	CALIFORNIA.								
		Bonita.....	32 39	117 03	3	1	1 05	Rattling.....	Gradual rocking.....	R. M. Allen.
		Calexico.....	32 41	115 30	6	1	1 00	Faint.....	Rumbling. Abrupt trembling and twisting N-S. Plate glass windows broken. Apparently central in Imperial Valley.	H. M. Rouse.
		El Centro.....	32 48	115 32	-----	1	30	Faint.....	Doors and windows rattled.....	Associated Press.
		Julian.....	33 04	116 36	3-4	1	08	Faint.....	Rumbling. Abrupt trembling.....	J. H. L. Vogt.
		Point Loma.....	32 43	117 15	2	1	Few.	None.....	Vibration in all directions.....	Fred J. Dick.
		San Diego.....	32 43	117 10	2	1	Few.	None.....	Vibration in all directions.....	Fred J. Dick.
5 10		Calexico.....	32 41	115 30	2	1	01	None.....	Rapid trembling.....	H. M. Rouse.
7 10		Calexico.....	32 41	115 30	4	1	02	Loud.....	Rumbling. Rapid trembling N-S.	H. M. Rouse.
11 12		Calexico.....	32 41	115 30	4	1	01	None.....	Rapid trembling.....	H. M. Rouse.
14 50		Calexico.....	32 41	115 30	3	1	01	Faint.....	Rumbling. Gradual trembling NE-SW.	H. M. Rouse.
2	12 51	Calexico.....	32 41	115 30	3	1	03	Faint.....	Rumbling. Rapid bump, then a twist NE-SW. Four other quakes reported during night by others.	H. M. Rouse.
		Calexico.....	32 41	115 30	5	2	40	Faint.....	Rumbling. Gradual trembling N-S.	H. M. Rouse.
13 8 30		Lone Pine.....	36 37	118 02	4	3	Few.	None.....	Abrupt rocking.....	G. F. Marsh.
16 16 40		Hemet.....	33 44	116 58	3	1	01	Loud.....	Abrupt bumping NE	C. E. McManigal.
22 11 08		Calexico.....	32 41	115 39	3	1	01	Faint.....	Rumbling. Rapid bumping NE-SW.	H. M. Rouse.
21 9 35		Lone Pine.....	36 37	118 02	-----	2	Few.	None.....	Bumping.....	G. F. Marsh.
25 17 37		Calexico.....	32 41	115 30	2	1	01	None.....	Abrupt bumping.....	H. M. Rouse.
28 12 39		Hemet.....	33 44	116 58	4	2	02	Yes.....	Abrupt bumping SE.	C. E. McManigal.
		NEW MEXICO.								
28	11 30	Albuquerque.....	35 06	106 39	3	1	Few.	None.....	Slight trembling.....	Albuquerque Evening Herald.
		Cerillos.....	35 27	106 07	10	-----			Many plastered ceilings and chimneys fell. People on street thrown off their feet. Heavy break in surface of earth at edge of town. No one badly injured.	Albuquerque Evening Herald.
		Espanola.....	36 00	106 05	3-5	1	02	Faint.....	Like distant thunder. Rapid rocking and trembling. People awakened.	Mrs. E. F. McBride.
		Estancia.....	34 49	106 04	2	1	1 00	None.....	Rapid twisting.....	J. L. Stubblefield.
		Lamy.....	35 29	105 53	7-8	1	13		Rapid twisting about six times. Frame house swayed back and forth and walls cracked in the corners of rooms.	T. W. Hanna.
		Las Vegas.....	35 35	106 14	2	1	Few.	None.....		Las Vegas Daily Optic.
		Montoya.....	35 06	104 04	2	2	10	None.....	Abrupt trembling.	E. S. Micksch.
		Moriarty.....	34 59	106 03	5	1-3	05	Rumbling.....	Like distant thunder. Abrupt trembling.	H. M. Bigger.
		Pena Blanca.....	35 35	106 21	5-7	1	Few.	None.....		Samuel H. Sayce.
		Porvenir.....	35 43	105 25	2	1	03	Rumbling.....	Abrupt rocking SW-N.E. Shook down plaster. Doors and windows rattled.	R. E. Springels.
		Santa Fe.....	35 41	105 57	4-7	1			Abrupt bump and rocking E-W. Doors rattled, piano sounded, some adobe walls cracked.	Charles E. Linney.
		Stanley.....	35 07	106 00	5-8	1		Rumbling.....		Henry Winans.
		Valmora.....	35 47	104 59	2	1	Few.	None.....		Alice Brown.
		Waldo.....	35 28	106 10	5-8	1	Few.		Awakened people.....	Albuquerque Evening Herald.
		WASHINGTON.								
7	21 15	North Fork Sauk River.	48 06	121 22	4	1	05	Loud.....	Rumbling. Gradual trembling E-W.	C. M. Mackintosh.

TABLE 2.—*Instrumental seismological reports, May, 1918.*

(Time used: Mean Greenwich, midnight to midnight. Nomenclature: International.)

(For significance of symbols see REVIEW for January, 1918, p. 34.)

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _E	A _N		
Alaska. Sitka. Magnetic Observatory. U. S. Coast and Geodetic Survey. J. W. Green.								

Lat., 57° 03' 00" N.; long., 135° 30' 06" W. Elevation, 15.2 meters.
Instruments: Two Bosch-Omori, 10 and 12 kg.Instrumental constants: { E 10 16
N 10 15

1918. May 20		eP _N	H. m. s.	Sec.	μ	μ	km.	E-W component out of order during entire month
			15 00 01	12				
		eL _N	15 12 45	34				
		M _N	15 19 05	20				
		C	15 31 ..			60		
		F	16 08 ..					
23		eP _N	12 05 03					
		S _N	12 10 06					
		eL _N	12 15 ..	28				
		M _N	12 20 11	12				
		C	12 22 ..	9				
		F	13 16 ..			280		

Arizona Tucson. Magnetic Observatory. U. S. Coast and Geodetic Survey. F. P. Ulrich.

Lat., 32° 14' 48" N.; long., 110° 50' 08" W. Elevation, 769.6 meters.
Instruments: Two Bosch-Omori, 10 and 12 kg.Instrumental constants: { E 10 14
N 10 18

1918. May 6		e _N	H. m. s.	Sec.	μ	μ	km.	No motion on N-S.
			4 59 10	3				
		e _E	4 59 51					
		M _E	5 00 28	10	130			
		M _N	5 00 35	10		120		
		C	5 02 ..					
		F	5 13 ..					
20		eP _E	14 46 ..					
		eP _N	14 57 ..					
		eL _E	15 11 ..	20				
		M _E	15 19 05	16	50			
		C	15 22 ..					
		F	15 44 ..					
23		eP _N	11 58 52	4				
		eP _E	11 59 12	3				
		eL _E	12 00 12	20				
		M _E	12 00 20	12				
		C	13 06 ..		6,000+	3,150+		
		F	13 20 ..					

California. Berkeley. University of California.

Lat., 37° 52' 16" N.; long., 122° 15' 37" W. Elevation, 85.4 meters.

(See Bulletin of the Seismographic Stations, University of California.)

California. Mount Hamilton. Lick Observatory.

Lat., 37° 20' 24" N.; long., 121° 38' 34" W. Elevation, 1,231.7 meters.

(See Bulletin of the Seismographic Stations, University of California.)

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _E	A _N		
California. Point Loma. Raja Yoga Academy. F. J. Dick.								

Lat., 32° 43' 03" N.; long., 117° 15' 10" W. Elevation, 91.4 meters.

Instrument: Two-component, C. D. West seismoscope.

1918. May 1		H. m. s.	Sec.	μ	μ	km.	Very light shock.
3						300	
4						200	
9						100	
13						300	
17						100	

California. Santa Clara. University of Santa Clara. J. S. Ricard, S. J.

Lat., 37° 28' 38" N.; long., 121° 57' 03" W. Elevation, 27.43 meters.

(See record of the Seismographic Station, University of Santa Clara.)

1918. May 6		H. m. s.	Sec.	μ	μ	km.	No motion on N-S.
		e _N	4 59 10	3			
		e _E	4 59 51				
		M _E	5 00 28	10	130		
		M _N	5 00 35	10		120	
		C	5 02 ..				
		F	5 13 ..				
20		eP _E	14 46 ..				
		eP _N	14 57 ..				
		eL _E	15 11 ..	20			
		M _E	15 19 05	16	50		
		C	15 22 ..				
		F	15 44 ..				
23		eP _N	11 58 52	4			
		eP _E	11 59 12	3			
		eL _E	12 00 12	20			
		M _E	12 00 20	12			
		C	13 06 ..		6,000+	3,150+	
		F	13 20 ..				

1918. May 23		P _N	H. m. s.	Sec.	μ	μ	km.	Visible activity; Stronger on N-S.
			?	?				
		P _E	13 01 ..					
		P _N	13 05 ..					
		S _N	13 05 ..					
		L _N	13 09 ..		12-15	*15,000		
		L _E	13 09 ..		9-12	*45,000		
		M _E	13 06 ..		12	*45,000		
		M _N	13 08 ..		10	*46,000		
		C _E	13 11 ..					
		C _N	13 14 ..					
		F _E	13 27 ..					
25		L _E	11 30 ..					
		F _N	13 ..					
27		L _N	12 10 ..					
		F _N	13 30 ..					
28		L _E	16 10 ..					
		F _E	18 ..					
29		L _N	13 35 ..					
		F _N	14 20 ..					

* Trace amplitude.

Sinusoidal o f long period.

Quake reported from Albuquerque, N. Mex. Waves visible on both components.

Distinct waves at intervals during day.

TABLE 2.—Instrumental seismological reports, May, 1918—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _E	A _N		

District of Columbia. Washington. U. S. Weather Bureau.

Lat., 38° 54' 12" N.; long., 77° 03' 03" W. Elevation, 21 meters.

Instrument: Marvin (vertical pendulum, undamped. Mechanical registration).

$$\begin{matrix} V & T_0 \\ \text{Instrumental constants: } 110 & 6.4 \end{matrix}$$

1918. May 1		eP _n	H. m. s.	Sec.	μ	μ	km.	Time correction uncertain.
			4 48 ?	.....			
		eS _n	4 49 ?	.....			
		L _n	4 50 ?	.....			
		F _n	5 05 ..	.....			
2		e?	2 41 ..	.....				Time correction uncertain.
		M	2 43 ?	.....			
		F	2 50 ..	.....			
6		eP?	5 05 ?	.....				Time correction uncertain.
		eS?	5 11 ?	.....			
		L	5 16 ?	.....			
		F	5 35 ..	.....			
9		eL?	9 54 ?	.....				Time correction uncertain.
		F	10 00 ..	.....			
11		eP?	21 34 ?	.....				Time correction uncertain.
		eS?	21 44 ?	.....			
		eL	22 04 ..	16				
		F	22 15 ..	.....			
18		e	21 42 17	.....			
		L	21 46 02	10				
		F	22 ..	.....			
20		P	14 44 51	.....			
		P _{rep}	14 49 31	.....			
		S	14 51 55	.....			
		L	14 58 35	20				
		L	15 06 23	16				
		L	15 13 38	10				
		L	15 30 38	12				
		F	16 30 ..	.....			
20		P	18 06 18	.....			
		S	18 15 02	.....			
		eL	18 30 33	28				
		F	19 30 ..	.....			
22		eL	7 04 ..	.....			
		F	7 15 ..	.....			
23		P	12 03 45	.....			
		S	12 10 05	.....			
		L	12 13 25	.....			
		M	12 14 30	.....	*14,000	*31,000		
		F	14 30 ..	.....			
25		P	19 40 34	.....			
		S	19 49 38	.....			
		eL	19 58 00	.....			
		L	20 01 00	30				
		F	20 25 ..	.....			

* Trace amplitude.

District of Columbia. Washington. Georgetown University.
F. L. Tondorf, S. J.

Lat., 38° 54' 25" N.; long., 77° 04' 24" W. Elevation, 42.4 meters. Subsoil: Decayed diorite.

Instruments: Wiechert 200 kg., astatic, horizontal pendulums, 80 kg., vertical.

$$\begin{matrix} V & T_0 & \epsilon \\ \text{Instrumental constants: } \begin{cases} E & 165 & 5.4 & 0 \\ N & 143 & 5.2 & 0 \\ Z & 80 & 3.0 & 0 \end{cases} & & \end{matrix}$$

1918. May 1		eN	H. m. s.	Sec.	μ	μ	km.	e uncertain. Heavy microseisms.
			4 48 31	.....			
		eS	4 48 33	.....			
		L _n	4 52 12	11				
		L _n	4 52 18	7				
		F _n	4 56 ..	.....			
2		e?	2 33 28	.....			
		L _n	2 41 57	6				
		L _n	2 42 46	6				
		F	2 47 ..	.....			
6		e	5 12 26	.....			
		eN	5 12 27	.....			
		L _n	5 13 12	11				
		L _n	5 14 43	11				
		F	5 27 ..	.....			

Microseisms.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _E	A _N		

District of Columbia. Washington. Georgetown University—Contd.

1918. May 16		eP _n	H. m. s.	Sec.	μ	μ	km.	Microseisms; P _E does not show No distinct main.
			21 38 23	.....			
		S _n	21 43 21	.....			
		eL _n	21 45 37	10				
		L _n	21 46 15	11				
		F	22 09 ..	.....			
20		IP _n	14 44 53	.....			
		IP _n	14 44 54	.....			
		IS _n	14 51 59	19				
		L _n	14 58 25	.....			
		MS _n	14 59 40	*1,500				
		MR _n	14 59 51	*800				
		F	16 20 ..	.....			
20		IP _n	18 00 02	.....				No distinct main.
		eP _n	18 00 04	.....			
		IS _n	18 15 02	.....			
		eS _n	18 15 02	.....			
		eL _n	18 26 16	.....			
		eL _n	18 26 18	.....			
		F	19 30 ..	.....			
22		e _m	6 55 08	.....			
		i _m	6 58 00	.....			
		Q _n	6 58 47	.....			
		L _n	7 04 27	11				
		L _n	7 04 29	9				
		F	7 22 ..	.....			
23		eP _n	12 03 57	.....			
		eS _n	12 09 00	7.5				
		eL _n	12 13 18	.....			
		M _n	12 14 42	.....			
		M _n	12 17 40	.....			
		M _n	12 19 07	.....			
		M _n	12 19 40	.....			
		F	14 ca ..	.....			
24								
25		P	19 40 35	.....			
		S _n	19 45 20	.....			
		S _n	19 45 24	6				
		L	19 49 55	.....			
		F	20 30 ..	.....			

* Trace amplitude.

Hawaii. Honolulu. Magnetic Observatory. U. S. Coast and Geodetic Survey. Frank Neumann.

Lat., 21° 19' 12" N.; long., 158° 03' 48" W. Elevation, 15.2 meters.

Instrument: Milne seismograph of the Seismological Committee of the British Association, E-W component.

1918. May 20		P	H. m. s.	Sec.	μ	μ	km.	Instrument out of adjustment during entire month of April and until May 20, and probably a portion of March also.
			14 58 24	.....			
		S	15 02 00	.....			
		I	15 06 00	.....			
		M	15 12 42	30	*1,700			
		C	15 17 12	.....			
		F	15 51 ..	.....			
20		e	18 13 00	31				
		L	18 19 12	.....			
		M	18 23 24	28	*1,500			
		C	18 27 ..	.....			
		F	20 47 ..	.....			
23		e	12 05 00	.....			
		L	12 15 00	24				
		M	12 17 12	28	*1,500			
		C	12 22 ..	.....			
		F	13 25 ..	.....			
25		eP	19 42 12	.....			
		S	19 52 48	.....			
		L	20 03 38	30				
		M	20 08 36	42	*1,000			
		C	20 09 ..	.....			
		F	20 27 ..	.....			
31		eP	9 01 12	.....			
		eL	9 05 42	29				
		M	9 08 36	29	*200			
		C	9 11 ..	.....			
		F	9 25 ..	.....			

* Trace of amplitude.

MONTHLY WEATHER REVIEW.

MAY, 1918

TABLE 2.—Instrumental seismological reports, May, 1918—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Dis-tance.	Remarks.
					A _E	A _N		

Kansas. Lawrence. University of Kansas. Department of Physics and Astronomy. F. E. Kester.

Lat., 38° 57' 30" N.; long., 95° 14' 58" W. Elevation, 301.1 meters.

Instrument: Wiechert.

$$\text{Instrument constants. } \begin{cases} V & T_0 & e \\ \{E & 177 & 3.4 & 4:1 \\ N & 205 & 3.4 & 4:1 \end{cases}$$

1918. May 1		<i>H. m. s.</i>	Sec.	μ	μ	km.	P _N and S not discernible.	
							P _E ?	P _N ?
	P _E ?	4 38 45						
	P _N ?	4 41 03						
	eL _E	4 41 08						
	eL _N	4 41 34	2.5	0.6				
	M _E	4 41 34						
	M _N	4 41 37	4.5	1.5				
	F.	4 51 ..						
6	IP?	5 09 14						
	eP	5 00 32						
	S _E	5 03 21						
	L _E	5 05 59						
	L _N	5 06 51						
	M.	5 08 33	12-15	5.4	8.7			
	F.	5 26 ..						
20	eP _E	16 46 21						
	S _E	16 55 57		3.7				
	L _E	17 06 21						
	M _E	17 12 24		6.2				
	F.	17 47 ..						
23	P.	12 01 40						
	S _E	12 01 53						
	S _N ?	12 01 59						
	L _E ?	12 07 01						
	L _N	12 07 03						
	M.	12 ? ?		72.6	68.9			
	V _E	13 16 ..						
	F _N	13 25 ..						

Maryland. Cheltenham. Magnetic Observatory. U. S. Coast and Geodetic Survey. George Hartnell.

Lat., 38° 44' 00" N.; long., 76° 59' 30" W. Elevation, 71.6 meters.

Instruments: Two Bosch-Omori, 10 and 12 kg.

$$\text{Instrument constants. } \begin{cases} V & T_0 & e \\ \{E & 10 & 15 \\ N & 10 & 15 \end{cases}$$

1918. May 20		<i>H. m. s.</i>	Sec.	μ	μ	km.	S _N and S _E not discernible.	
							P.	S.
	P.	14 44 51	3					
	S.	14 51 55	10	380	380			
	eL _E	14 58 40	20					
	eL _N	14 58 50	20					
	M _E	14 59 50	15			110		
	M _N	15 02 04	15	240				
	C.	15 06 ..						
	F.	15 54 ..						
20	eN.	18 06 03	5					
	eS.	18 06 21	5					
	M _E	18 15 25				10		
	M _N	18 15 39			60			
	F.	18 23 ..						
23	eN.	12 09 14						
	eL.	12 13 08						
	M _E	12 15 28	16			900		
	M _N	12 17 08	10	150				
	C.	12 24 ..						
	F.	13 09 ..						
25	P.	19 40 39	4					
	eB.	19 48 35						
	eL.	19 58 ..	28					
	C.	19 02 20	24	20	10			
	F.	19 17 ..						

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _E	A _N		

Massachusetts. Cambridge. Harvard University Seismographic Station. J. B. Woodworth.

Lat., 42° 22' 36" N.; long., 71° 06' 59" W. Elevation, 5.4 meters. Foundation: Glacial sand over clay.

Instruments: Two Bosch-Omori 100 kg. horizontal pendulums (mechanical registration).

$$\text{Instrument constants. } \begin{cases} V & T_0 & e \\ \{E & 80 & 23 & 0 \\ N & 50 & 25 & 4:1 \end{cases}$$

1918. May 1		<i>H. m. s.</i>	Sec.	μ	μ	km.	P _N and S not discernible.	
							O.	eP _E
		4 50 31	2					
	S _E	4 51 01					6	
	L _E	4 51 29					12	
	F.	5 07 ca						
2	L _N	2 43 19						
	L _E	2 43 27	9-8					
	L _N	2 44 38						
	L _E	2 46 13						
	L _N	2 46 24	10					
	L _E	2 47 10						
	F.	2 50 19						
6	O.	5 ..						
	eP _E	5 15 09	3					
	L _E	5 18 08	12					
	L _N	5 18 24	10					
	F.	5 28 30						
11	O?	20 43 56						
	L _N	21 04 47	20					
	L _E	21 06 38	16					
	F.	21 17 ca						
16	O _E	21 45 34						
	S _N	21 45 42	12,15					
	S _E	21 47 09	12					
	L _N	21 49 20	10,15					
	L _E	21 49 28	8					
	M _E	21 49 56						
	M _N	21 53 54	8,12					
	F.	22 07 ca						
20	O.	14 55 43						
	L _N	14 41 19						
	F.	14 44 41						
	S _E	14 51 08						
	S _N	14 51 22						
	O.	17 55 13						
	P _E	18 06 28						
	P _N	18 06 36						
	S _N	18 15 42	6					
	S _E	18 15 46						
	eL _E	18 29 42	18					
	L _N	18 31 20	32					
	F?	20 ca ..						
20	L _N	21 40 46	10					
	O.	21 43 16						
22	O.	6 ..						
	cP _E	6 50 08	4					
	S _E ?	6 58 42	6					
	eL _E ?	7 05 02	8					
	F.	7 09 11	12					
		7 24 30						
23	O.	11 57 22						
	eP _E	12 04 48						
	S.	12 10 41						
	eL _E	12 15 08	31					
	L.	12 16 30						
	M ¹	12 18 ca	10 ₁					
	M ²	12 20 ca	9 ₁					
	M ³	12 21 ca						
	M ⁴	12 22 ca	11 ₁					
	M ⁵	12 23 ca						
	M ⁶	12 25 ca						
	M ⁷	12 26 ca						
	C.	12 53 ..	10,13					
	F?	13 15 ..						

Records changed.

TABLE 2.—*Instrumental seismological reports, May, 1918—Continued.*

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _S	A _N		

Missouri. Saint Louis. St. Louis University. Geophysical Observatory. J. B. Goesse, S. J.

Lat., 38° 38' 15" N.; long., 90° 13' 58" W. Elevation, 160.4 meters. Foundation: 12 feet of tough clay over limestone of Mississippi system, about 300 feet thick.

Instrument: Wiechert 80 kg. astatic, horizontal pendulum.

V T₀ ε
Instrumental constants.. 80 7 5:1

1918. May	7		H. m. s.	Sec.	μ	μ	km.	Distance?
			e?	5 01 12	2	*2,000	**9,000	
		L _S	5 07 24	2				
		L _N	5 07 24	12				
		F	5 17 00					
	20	IP	14 46 06				6,600	
		S	14 54 06					
		L	15 03 12					
		M	15 08 48	18	*24,000	*15,000		
		F	15 48 ..					
	20	IP _N	18 05 00				4,000?	
		IP _N	18 06 18					
		S _N	18 ? ?					
		S _N	18 10 42					
		L _N	18 15 24	1	2,000			
		L _N	18 15 24					
		M _N	18 16 00	1		*4,000		
		F	18 50 00					
	23	IP	12 02 18				2,300	
		S	12 06 06					
		S	12 06 12					
		L	12 07 06	9	*6,000			
		L _N	12 07 06					
		M	12 10 00	18		*34,000		
		F	13 12 ..					

New York. Buffalo. Canisius College. John A. Curtin, S. J.

Lat., 42° 53' 02" N.; long., 78° 52' 40" W. Elevation, 190.5 meters.

Instrument: Wiechert 80 kg. horizontal.

V T₀ ε
Instrumental constants.. 80 7 5:1

(Report for May, 1918, not received.)

New York. Fordham. Fordham University. Daniel H. Sullivan, S. J.

Lat., 40° 51' 47" N.; long., 73° 53' 08" W. Elevation, 23.9 meters.

Instrument: Wiechert, 80 kg.

V T₀ ε
Instrumental constants.. {E 72 5.0 0
{N 72 5.0 0

1918. May	20		H. m. s.	Sec.	μ	μ	km.	No decided M.
			IP	15 40 12	4		5,300	
		iP _{rep} 1	15 42 00					
		iS	15 47 07					
		iS _N	15 47 10					
		L _N	15 50 49?					
		L _N	15 50 51?					
		F	17 00 ..					
	20	eP _N	19 01 43				7,645	
		eP _N	19 01 49					
		iS _N	19 10 52					
		iS _N	19 10 58					
		L	19 ? ?					
		F	20 06 ..					

*Trace amplitude.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _S	A _N		

New York. Ithaca. Cornell University. Heinrich Ries.

Lat., 42° 26' 58" N.; long., 76° 29' 09" W. Elevation, 242.6 meters.

Instruments: Two Bosch-Omori, 26 kg., horizontal pendulums (mechanical registration).

V T₀ ε
Instrumental constants.. {E 13 22 4:1
{N 14 25 4:1

1918. May	1		H. m. s.	Sec.	μ	μ	km.	Distance?
			e _N	4 48 52	3			
		e _N	4 49 18		12			
		F _N	4 59 30					
	6							
		e _N	5 08 20		6			
		L _N	5 13 15		17			
		L _N	5 13 23		19			
		F _N	5 31 ..					
	20	P _N	14 44 53		3			
		iS _N	14 52 14		13	*3,500		
		iS _N	14 52 15		15		*3,400	
		L _N	14 56 55		15			
		L _N	14 57 25		22			
		F _N	16 45 ..					
	20	P _N	18 08 22		3			
		iS _N	18 15 36		6	*800		
		S _N	18 15 38		5			
		i _N	18 16 12		6	*900		
		i _N	18 16 12		6		*700	
		eL _N	18 27 18		18			
		L _N	19 04 28		35			
		L _N	19 05 36		28			
		F _N	19 30 ..					
	22	e _N	6 54 52		5			
		e _N	6 56 44		6			
		e _N	6 58 55		6			
		eL _N	7 04 23		11			
		F _N	7 24 ..					
	23	e _N	12 03 56		4			
		e _N	12 09 05		4			
		e _N	12 09 08		8			
		eL _N	12 11 42		12			
		M _N	12 15 00		10			
		M _N	12 15 55		9			
		M _N	12 16 11		11			
		M _N	12 17 28		11	*4,000		
		F _N	14 21 ..					
	25	eP _N	19 40 38		4			
		eP _N	19 40 43		4			
		eS _N	19 50 14		9			
		eS _N	19 50 19		8			
		L _N	20 00 47		46			
		F _N	20 34 ..					

Panama Canal. Balboa Heights. Governor, Panama Canal.

Lat., 8° 57' 39" N.; long., 79° 33' 29" W. Elevation, 27.6 meters.

Instruments: Two Bosch-Omori, 100 kg.

V T₀
Instrumental constants.. 35 20

1918. May	20		H. m. s.	Sec.	μ	μ	km.	Direction uncertain.
			P	14 43 48	20		3,220?	
		L _N	14 53 52?		20			
		L _N	14 54 04?		20			
		M _N	14 54 04			*2,500	*4,500	
		M _N	14 54 12					
		F _N	15 30 ..					
	20	P _N	18 02 04					
		P _N	18 02 10					
		L _N	18 12 04?		20			
		L _N	18 12 03?		20			
		M _N	18 12 12			*1,500	*1,000	
		F _N	18 26 ..					
	25	P _N	19 36 33					
		P _N	19 36 35					
		L _N	19 42 46		20			
		M _N	19 43 06					
		L _N	19 45 46		20			
		M _N	19 46 07			*1,500		
		F _N	20 22 ..					
		F _N	20 26 ..					

* Trace amplitude.

TABLE 2.—Instrumental seismological reports, May, 1918—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _a	A _n		

Porto Rico. Vieques. Magnetic Observatory. U. S. Coast and Geodetic Survey. W. M. Hill.

Lat., 18° 09' N.; long., 65° 27' W. Elevation, 19.8 meters.

Instruments: Two Bosch-Omori.

V T₀
Instrumental constants. { E 10 18
{ N 10 20

1918. May 20		eP _n	H. m. s.	Sec.	μ	μ	km.	
		eP _n	14 42 30	3				
		eP _n	14 42 31	3				
		eS _n	14 47 30	8				
		eS _n	14 47 38	6				
		eL _n	14 49 16	22				
		eL _n	14 49 37	26				
		M _n	14 49 57	26				
		M _n	14 52 26	20	330	180		
		C _n	14 55 ..					
		C _n	14 57 ..					
		F.	15 33 ..					
20		e _n	18 05 55					No distinct phases.
		eL _n	18 13 30	16				
		eL _n	18 14 ..					
		M _n	18 14 42		20	10		
		F.	18 35 ..					
25		e _n	19 38 54					Do.
		eL _n	19 46 21					
		eL _n	19 46 25					
		F.	20 00 ..					

Vermont. Northfield. U. S. Weather Bureau. Wm. A. Shaw.

Lat., 44° 10' N.; long., 72° 41' W. Elevation, 256 meters.

Instruments: Two Bosch-Omori, mechanical registration.

V T₀
Instrumental constants. { E 10 15
{ N 10 16

1918. May 6		e	H. m. s.	Sec.	μ	μ	km.	
		e	5 14 40	12				
		L	5 15 45					
		F.	5 30 ..					
11		e	21 57 ..					
		F.	22 10 ..					
16		e	21 49 ..					
		F.	22 00 ..					
20		e	14 44 50					
		S	14 52 00					
		L	14 57 05	18				
		L	15 00 00	20				
		F.	16 00 ..					
20		e	18 06 37					
		S	18 16 00					
		F.	18 30 ..					
23		e	12 04 50					
		eL	12 12 30	12				
		F.	13 30 ..					
25		e	19 50 48					
		eL	19 57 50					
		L	20 04 00	20				
		F.	20 20 ..					

Canada. Ottawa. Dominion Astronomical Observatory. Earthquake Station. Otto Klotz.

Lat., 45° 23' 38" N.; long., 75° 42' 57" W. Elevation, 83 meters.

Instruments: Two Bosch photographic horizontal pendulums, one Spindler & Hoyer 80 kg. vertical seismograph.

V T₀
Instrumental constants. { 120 26

1918. May 1		O _P	H. m. s.	Sec.	μ	μ	km.	
		O _P	4 48 10				440?	
		eP _{??}	4 49 11					
		eS _{??}	4 50 00					
		L	4 50 30?	8				
		L	4 55 ..	6				
		F	5 05 ..					
2		e?	2 38 20	2				{ Heavy wind tremors all day interfere with the reading in both of these earthquake stations. They may not be seismic.
		e?	2 40 ..	8				
		F	2 48 ..					
2		eL ₇	4 46 ..	12				
		F	4 50 ..					

† Original time given in tenths of a minute.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _a	A _n		

Canada. Ottawa. Dominion Astronomical Observatory—Contd.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _a	A _n		
1918. May 6		O _P	H. m. s. 5 00 50	Sec.	μ	μ	km. 2,610?	
		eP _{??}	5 06 14		8			
		eS _{??}	5 10 28					
		eL	5 13 ..					
		M	5 16 ..		8			
		L	5 19 ..		8			
		L	5 25 ..		7			
		L	5 30 ..		7			
		L	5 43 ..		10			
		F	5 50 ..					
9		e	9 52 12		1			
		eL	9 52 30		12			
		L	9 54 30		9			
		F	10 ..					
11		O _P	21 23 16				8,980	
		eP	21 35 28					
		eS	21 45 37					
		eL	22 03 ..		30			
		L	22 10 ..		15			
		L	22 15 ..		15			
		F	22 35 ..					
16		O _P	21 27 44				2,930?	
		eP _{??}	21 33 34					
		eS _{??}	21 38 12					
		eL _{??}	21 40 40					
		L	21 47 ..		9			
		L	21 50 ..		7			
		L	21 54 ..		7			
		L	22 00 ..		7			
		F	22 10 ..					
20		O _P	14 35 55				5,740	
		iP	14 45 10					
		iS	14 52 32					
		eL	14 58 ..		22			
		L	15 05 ..		20			
		L	15 08 ..		16			
		L	15 15 ..		16			
		L	15 30 ..		9			
		L	15 45 ..		17			
		L	16 05 ..		10			
		F	17 ..					
20		O _P	17 55 15				8,120	
		P	18 06 42					
		P _{rep} 1	18 09 46					
		P _{rep} 2	18 11 30					
		S	18 16 08					
		S _{rep}	18 21 15					
		eL	18 30 ..					
		L	18 35 ..		35			
		L	18 40 ..		21			
		L	18 45 ..		17			
		eL	19 02 ..		40			
		L	19 10 ..		21			
		L	19 15 ..		18			
		F	19 35 ..					
23		O _P	6 41 15				5,300	
		eP	6 50 02					
		iS	6 57 00					
		eL	7 04 48					
		L	7 12 ..		8			
		L	7 40 ..		8			
		F	8 ..					
23		O _P	11 57 13				3,660	
		iP	12 04 06					
		iS	12 09 33					
		eL	12 13 ..					
		L	12 32 ..					
		L	12 45 ..					
		F	13 ? ?					
25		O _P	19 29 26				8,520	
		iP	19 41 14					
		S	19 51 00					
		i	19 53 48					
		eL	20 06 ..		40			
		L	20 13 ..		16			
		L	20 28 ..		8			
		F	20 50 ..					
26		e	10 10 32					
		F	10 13 20					
30		e	22 37 ..		7			
		F	22 47 ..					

F lost in changing sheets.

May not be seismic.

TABLE 2.—*Instrumental seismological reports, May, 1918—Continued.*

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.	Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.												
					A _S	A _N								A _S	A _N														
Canada. Toronto. Dominion Meteorological Service.																													
Lat. 43° 40' 01" N.; long., 79° 23' 54" W. Elevation, 113.7 meters. Subsoil: Sand and clay.																													
Instrument: Milne horizontal pendulum, North. In the meridian.																													
Instrumental constant... 18. Pillar deviation: 1 mm. swing of boom=0.50".																													
1918. May 1. L. H. m. s. 4 45 36 ¹ Sec. *50 μ μ km. Air currents going on.																													
L. 4 49 36 ² *500																													
2. Microseisms going on during morning that would mask any small quake.																													
4. Microseisms at intervals.																													
6. iL. 5 12 24 M. 5 12 54 F. 5 22 12 *300																													
11. L. 22 03 30 F. 22 15 54 *50																													
16. eL. 21 47 12 M. 21 50 12 F. 22 06 18 *200																													
20. L. 14 23 42 F. 14 26 42 *100																													
20. Thickening.																													
20. eP. 14 45 12 IP. 14 52 24 IS. 14 53 06 eL. 14 58 24 L. 15 01 06 Fast. Slow. 15 02 18 18-24 M. 15 05 42 iL. 15 08 30 18 iL. 15 12 30 6,340																													
La Serena, Chili. A clear record.																													
20. P. 14 48 54 S. 15 00 00 L. 15 16 30 M. 15 25 17 F. 17 27 46 VERTICAL. 14 48 54 2-3 15 00 00 9 15 16 30 20 15 25 17 24 7																													
20. P. 18 08 22 S. 18 18 41 L. 18 34 55 M. 18 47 22 F. 20 44 15 VERTICAL. 18 07 30 2-5 18 20 12 6 18 18 ? 18 41 30 30-36 1 ? ?																													
20. P. 18 08 22 S. 18 18 41 L. 18 34 55 M. 18 47 22 F. 20 44 15 VERTICAL. 18 07 30 2-5 18 20 12 6 18 18 ? 18 41 30 30-36 1 ? ?																													
22. L. 6 52 44 M. 6 55 41 F. 6 59 39 *300																													
23. P. 12 02 31 S. 12 07 09 L. 12 10 08 M. 12 13 36 F. 13 54 45 VERTICAL. 12 02 30 3 12 07 17 9 12 10 59 14 12 13 30 15 20 52 25																													
23. P. 12 02 31 S. 12 07 09 L. 12 10 08 M. 12 13 36 F. 13 54 45 VERTICAL. 12 02 30 3 12 07 17 9 12 10 59 14 12 13 30 15 20 52 25																													
25. P. 19 40 25 S. 19 51 25 L. 20 04 55 M. 20 16 25 F. 20 52 25 *500																													
25. P. 19 40 25 S. 19 51 25 L. 20 04 55 M. 20 16 25 F. 20 52 25																													

* Trace amplitude.

† Original time of all readings given in tenths of seconds.

* Trace amplitude.

TABLE 3.—*Late seismological reports (instrumental).*

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _S	A _N		

Massachusetts. Cambridge. Harvard University Seismographic Station, J. B. Woodworth.

Lat., 42° 22' 36" N.; long., 71° 06' 59" W. Elevation, 5.4 meters. Foundation: Glacial sand over clay.

Instruments: Two Bosch-Omori 100 kg. horizontal pendulums (mechanical registration).

$$\begin{matrix} V & T_0 & \epsilon \\ \text{Instrumental constants.} & \{ \begin{matrix} E & 80 & 23 & 0 \\ N & 50 & 25 & 4:1 \end{matrix} \end{matrix}$$

1918. Feb. 1		OIM _N C. F.	H. m. s.	Sec.	μ	μ	km. 0.1	Frost crack at station.
			8 57 44 8 57 46 8 57 50	.....	.....	.....	.....
3		eL _N L. F.	15 01 25 15 13 27 15 43 ..	20 15	.....	.....	.....	Very faint, N microseisms running.
12		L _N F.	10 03 48 10 45 ca	28	.....	.....	.....
13		e _N L _N L _N F.	3 43 ca { 3 55 04 3 58 26 3 59 25 ? ? ?	24	.....	.....	.....	Preceded for several hours by long period pulsations not clearly seismic.
13		O? e? e? S? e? F? S _{rep?} S _{rep?} eL _N	6 08 ca 6 20 13 6 28 04 6 35 45 6 37 51 6 44 07 6 44 49 6 52 02 7 01 34	..... ..... ..... ..... 10 32 40 20-24 56 50 48	..... ..... ..... ..... 12,400	..... ..... ..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... ..... ..... .....	Δ and O from eL-S. Displacement of stylus. Both components undamped; but M amplitudes very much larger on N than on E.
19	*	L? L?	17 23 ca 18 02 ..	*20,000? *15,000	.....	.....	.....	Record too uncertain for closer readings.
20		e. F.	5 52 24 5 53 25	.....	.....	.....	.....	Variable short periods.
20		e. F.	6 50 01 6 51 03	.....	.....	.....	.....	Variable short periods.
24		e. L. L. F.	23 12 36 23 14 07 23 14 33 23 24 08	..... 26 20 15	.....	.....	.....	Heavy microseisms.
1918. Mar. 16		O. eP _N . S. eL _N . L. F.	13 40 54 13 47 14 13 52 21 13 55 15 (14 22 34) (14 23 39) 14 26 30?	..... 2 6 12 15	..... ..... ..... ..... ..... ..... 3,350	..... ..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... ..... .....	Heavy microseisms.
19		L _N L. L. F.	6 57 25 6 59 22 7 13 44 7 46 ..	..... 20 15	.....	.....	.....	Records during morning hours too much entangled to be deciphered.
20					.....	.....	.....
21					.....	.....	.....
1918. Apr. 10		O. P. S. M. C. F.	1 10 45 1 11 35 1 12 18 1 12 22 1 12 47 1 14 03	.....	350	.....	.....	Not heard from.
10		O. L. L. M? F.	8 8 2 2 26 22 2 28 55 2 30 12 2 50 30	..... ..... 8	..... ..... ..... ..... .....	..... ..... ..... ..... .....	..... ..... ..... ..... .....	I notable, may be S.
13		L _N F?	2 15 46 2 22 10	20	.....	.....	.....	Microseisms.

* Trace amplitude.

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _S	A _N		

Massachusetts. Cambridge. Harvard University Seismographic Station—Continued.

1918. Apr. 15		O. eF _N . S. L. F? <th>H. m. s.</th> <th>Sec.</th> <th>μ</th> <th>μ</th> <th>km. 5,740</th> <th data-kind="parent" data-rs="2">No M.</th>	H. m. s.	Sec.	μ	μ	km. 5,740	No M.
			8 27 44 8 30 56 8 44 18 8 50 06 9 20 ca	.....	.....	.....	.....
17		L _N	3 10 56 3 20 55	20 15	.....	.....	.....
17		O. e. F.	4 00 54 4 02 56 4 06 01 4 06 36	.....	8-9	.....	.....
21		O. P. S. eL _N . L. M. F.	6 50 07 22 39 45 22 45 34 22 49 06 22 49 52 22 51 34 22 55 00 0 48 27	.....	.....	.....	3,220	Press reports shock in Martinique about this time. P masked by microseisms. No N record.
22		Lg?	20 35 01 20 36 46 20 37 33 20 37 48	5-8	.....	.....	.....
27		O? et. S. eL _N . L. F.	14 43 43 14 52 ca 14 56 42 15 01 03 15 04 06 15 25 ..	.....	.....	.....	3,950?	
27		P. P. S. eS _N . F.	2 25 33 2 25 34 2 28 00 2 28 02 2 28 ..	.....	.....	.....	.....	Nonsinusoidal.

New York. Ithaca. Cornell University. Heinrich Ries.

Lat., 42° 23' 58" N.; long., 76° 29' 02" W. Elevation, 242 meters.

Instruments: Two Bosch-Omori, 25 kg., horizontal pendulums (mechanical registration)

1918. Mar. 19		eL _N . F _N .	H. m. s.	Sec.	μ	μ	km.	Omitted from March report.
			6 57 50 7 38 ..	20	.....	.....	.....
1918. Apr. 19		eP. S. N. F _N .	1 10 58 1 11 09 1 11 11 1 12 05 1 14 ..	.....	1	4	*300	
14		P. P. S. S. eS _N . F _N .	2 25 33 2 25 34 2 28 00 2 28 02 2 28 ..	.....	2	2	.....
15		P. P. S. S. eL _N . F _N .	8 36 14 8 36 25 8 43 22 8 43 23 8 52 .. 9 12 ..	.....	4	4	.....
17		eL _N . F _N .	3 13 .. 3 29 ..	12	.....	.....	.....
17		L _N . L _N . F _N .	7 01 19 7 04 40 7 19 ..	23	10	.....	.....
21		P. S. S. L _N . M. M. F _N .	22 38 57 22 44 24 22 44 25 22 47 16 22 50 10 22 52 25 00 30 ..	.....	4	5	.....
22		P. S. S. L _N . M. M. F _N .	22 38 57 22 44 24 22 44 25 22 47 16 22 50 10 22 52 25 00 30 ..	.....	4	5	*8,000	
27		eL _N . F _N .	15 02 23 15 15 ..	21	.....	.....	.....

* Trace amplitude.